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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/957,038	09/21/2001	Tomohiro Yamamura	040679-1366	3189

22428 7590 11/16/2004

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EXAMINER	
LU, TOM Y	

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/957,038	YAMAMURA, TOMOHIRO	
	Examiner	Art Unit	
	Tom Y Lu	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 21 September 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 2, 6, 7, 8, 15, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims in this office action are rejected with the best knowledge understood by the examiner.

   a. With regard to Claim 2, Applicant is advised to clarify the term "the other".

   b. With regard to Claim 6, applicant is advised to clarify the meaning of "whose detected number is less than the other".

   c. With regard to Claim 7, the examiner does not understand the essence of the claim language. Please explain.

   d. With regard to Claim 8, the examiner does not understand the essence of the claim language. Please explain.

   e. With regard to Claim 15, see explanation in Claim 6.

   f. With regard to Claims 16 and 17, see explanation in Claim 7.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Saneyoshi et al (U.S. Patent No. 5,410,346).

a. Referring to Claim 1, Saneyoshi discloses detecting the inter-vehicle distance (column 7, line 54, a distance detection circuit 20a calculates the distance between an object, which is a vehicle as shown in figure 8, and the monitoring vehicle 1); photographing a video image of a vehicular forwarding zone (see figure 8); detecting a plurality of edges including at least a part of the preceding vehicle from the photographed video image (see figures 9, 24 and 25); detecting an inter-edge spacing of mutually opposing edges from the detected video image (see figure 25, the width and height of the object vehicle is the claimed "inter-edge spacing of mutually opposing edges"); and calculating a present inter-vehicle distance of the vehicle to the preceding vehicle at a present time point from a previous inter-vehicle distance calculated thereby at a previous time point at which the inter-edge spacing of the mutually opposing edges has previously been detected and the inter-edge spacings at the previous time point and at the present time point (Saneyoshi teaches upon the recognition of the object vehicle in front of the monitoring vehicle 1, the collision judgment means will be able to determine the possibility of collision between the object vehicle and the monitoring vehicle 1 because the distance histogram as shown in figure 20 indicates the maximum value for the object vehicle, which the change of the position of the object vehicle allows the system to determine the present distance

between the object vehicle and the monitoring vehicle, column 3, lines 25-30, column 5, lines 28-35 and column 20, lines 61-65).

b. Referring to Claim 2, Saneyoshi discloses wherein the mutually opposing edges are one of longitudinally opposing edges with respect to an image screen and laterally opposing edges with respect thereto whose average gray level is larger than the other (see figure 25, the gray level of the opposing edge pixels is higher than the background).

c. Referring to Claim 3, Saneyoshi discloses wherein when detecting the mutually opposing edges on the video image, detecting new edges at an outside of a predetermined range of a previous video image previously photographed, within the predetermined range of which the mutually opposing edges whose inter-edge spacing is to be detected are present (the examiner interprets the essence of the claim as similar to Saneyoshi's detection of edges of the object vehicle as shown in figure 21 in the range of the first window, which changes according to the road shape).

d. Referring to Claim 4, Saneyoshi discloses wherein when calculating the present inter-vehicle distance, starting a calculation on the present inter-vehicle distance to the preceding vehicle from a time point at which the detected inter-vehicle distance falls within a predetermined range of distance, the predetermined range being modified according to a vehicular running state (the predetermined range is 2-100m, column 8, line 16, and the range can be modified according the running

route of the vehicle, which is determined by the vehicle speed sensor 3, column 3, line 31-32, and column 16, lines 7-8).

e. Referring to Claim 5, Saneyoshi discloses wherein the vehicular running state is a vehicular velocity (the vehicle speed sensor 3 is used to detect the road shape, column 8-9, also see equations 7 and 8 in column 16, which shows the distance is changed according to the speed and time).

f. Referring to Claim 6, Saneyoshi discloses wherein when detecting the inter-edge spacing of the detected mutually opposing edges, detecting the inter-edge spacing between the mutually opposing edges of one of longitudinally opposing edges or laterally opposing edges detected on the photographed video image whose detected number is less than the other (see figure 25, 1.3m is less than 1.7m).

g. Referring to Claim 7, Saneyoshi discloses wherein when detecting the inter-edge spacing between the vertical edges detected within the image when the detected inter-vehicle distance is longer than a predetermined distance or the interval of edges detected on the photographed image are narrower than a predetermined width (the edges are detected when the distance between object vehicle and the monitoring vehicle 1 is greater than 2m).

h. Referring to Claim 8, Saneyoshi discloses wherein when detecting the mutually opposing edges and vehicular velocity is higher than a predetermined vehicular velocity, detecting the inter-edge spacing of the laterally opposing edges detected on the photographed video image (the mutually opposing edges and the spacings are detected and determined as shown in figure 25).

i. Referring to Claim 9, Saneyoshi discloses wherein when detecting the inter-edge spacing between the mutually opposing edge, detecting laterally opposing edges on the photographed image when the vehicle is turning (see figures 23 and 24, the edges of the object vehicle are detected when the object vehicle is turning left).

j. Referring to Claim 10, Saneyoshi discloses wherein when detecting the mutually opposing edges, one of the inter-edge spacings of longitudinally opposing edges and horizontally opposing edges whose magnitude is wider than the other is selected (see figure 21, the spacing of the vertically opposing edges in the right window is wider than the left one, and it is selected).

k. With regard to Claim 11, see explanation in Claim 1.

l. With regard to Claim 12, see explanation in Claim 3.

m. With regard to Claim 13, see explanation in Claim 4.

n. With regard to Claim 14, see explanation in Claim 5.

o. With regard to Claim 15, see explanation in Claim 6.

p. With regard to Claim 16, see explanation in Claim 7.

q. With regard to Claim 17, see explanation in Claim 7.

r. Referring to Claim 18, Saneyoshi discloses wherein the edges to be detected by the edge detecting section are one of vertical edges and horizontal edges and wherein the edge detecting section detects the inter-edge spacing between the horizontally opposing edges detected on the video image photographed by the photographing device when a vehicular velocity of the vehicle is higher than a predetermined vehicular velocity (Saneyoshi teaches the photograph imaging

system CCD cameras 11 and 12 taking images at the distance of 2-100m, as shown in equations 7 and 8 at column 16, the distance Z is dependent on the velocity V, which means if the monitoring vehicle traveling at a constant velocity and the object vehicle is reduced speed to be within 100m range, then the speed of the monitoring vehicle 1 is higher than the speed of the object vehicle, and the photograph imaging system will be taking images of the object vehicle and detecting the edges of the object vehicle. "Predetermined velocity" herein is the velocity of the object vehicle).

s. With regard to Claim 19, see explanation in Claim 9.

t. With regard to Claim 20, see explanation in Claim 10.

u. Referring to Claim 21, Saneyoshi discloses wherein the inter-vehicle distance calculating section outputs the inter-vehicle distance calculated thereby to an adaptive cruise control system (column 7, lines 33-37).

v. With regard to Claim 22, see explanation in Claim 11.

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Shaw et al, U.S. Patent No. 5,529,138, see figure 11.

b. Shima et al, U.S. Patent No. 5,555,312, see figure 32.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom Y Lu whose telephone number is (703) 306-4057. The examiner can normally be reached on 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo H Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tom Y. Lu

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